Electronic
TUBES

6386
TWIN TRIODE
Five-Star Tube
★★★★★

FOR REMOTE-CUTOFF CASCODE-AMPLIFIER APPLICATIONS

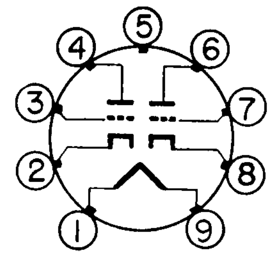
REMOTE-CUTOFF CHARACTERISTIC
9-PIN MINIATURE
SHOCK, VIBRATION RATINGS
HEATER-CYCLING RATING
MEDIUM-MU

DESCRIPTION AND RATING

The 6386 is a miniature medium-mu twin triode in which each section exhibits a remote-cutoff characteristic. It is designed primarily for use as a cascode radio-frequency amplifier, intermediate-frequency amplifier, or mixer in circuits to which it is desired to apply automatic-gain-control. When used in cascode applications, the performance of the 6386 is characterized by high gain, low noise figure, and low higher-order harmonic distortion.

The 6386 is a special-quality tube intended for use in critical industrial and military applications in which operational dependability is of primary importance. Features of the tube include a high degree of mechanical strength and a heater-cathode construction capable of withstanding many-thousand cycles of intermittent operation. When used in on-off control applications, the tube will maintain its emission capabilities after long periods of operation under cutoff conditions.

BASING DIAGRAM

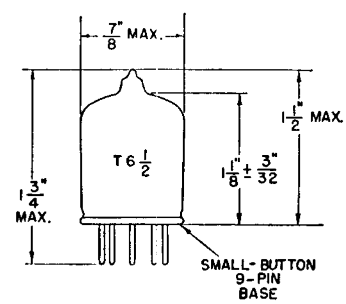


RETMA 8CJ

TERMINAL CONNECTIONS

Pin 1—Heater
Pin 2—Cathode (Section 2)
Pin 3—Grid (Section 2)
Pin 4—Plate (Section 2)
Pin 5—Internal Shield†
Pin 6—Plate (Section 1)
Pin 7—Grid (Section 1)
Pin 8—Cathode (Section 1)
Pin 9—Heater
† It is recommended that Pin 5 be grounded.

PHYSICAL DIMENSIONS



RETMA 6-1

GENERAL

ELECTRICAL

Cathode—Coated Unipotential

Heater Voltage, AC or DC	6.3±10%	Volts
Heater Current	0.35	Amperes
Direct Interelectrode Capacitances*		
Grid to Plate, Each Section	1.2	μμf
Input, Each Section	2.0	μμf
Output, Each Section	1.1	μμf
Heater to Cathode, Each Section	2.6	μμf
Grid to Grid	0.003	μμf
Plate to Plate	0.11	μμf

*Without external shield.

MECHANICAL

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

MAXIMUM RATINGS

DESIGN-CENTER VALUES, EACH SECTION

Plate Voltage	300	Volts
Plate Dissipation	1.5	Watts
DC Cathode Current	18	Milliamperes
Heater-Cathode Voltage‡		
Heater Positive with Respect to Cathode	90	Volts
Heater Negative with Respect to Cathode	90	Volts

‡ When the GL-6386 is used as a cascode amplifier and the two sections are connected in series, the heater-cathode voltage of the grounded-grid stage may be as high as 250 volts maximum with the heater negative with respect to the cathode.

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A_1 AMPLIFIER, EACH SECTION

Plate Voltage	100	Volts
Cathode-Bias Resistor	200	Ohms
Amplification Factor	17	
Plate Resistance, approximate	4250	Ohms
Transconductance	4000	Micromhos
Plate Current	9.6	Milliamperes
Grid Voltage, approximate		
Gm = 100 Micromhos	−16	Volts

CASCODE AMPLIFIER—SEE CIRCUIT DIAGRAM

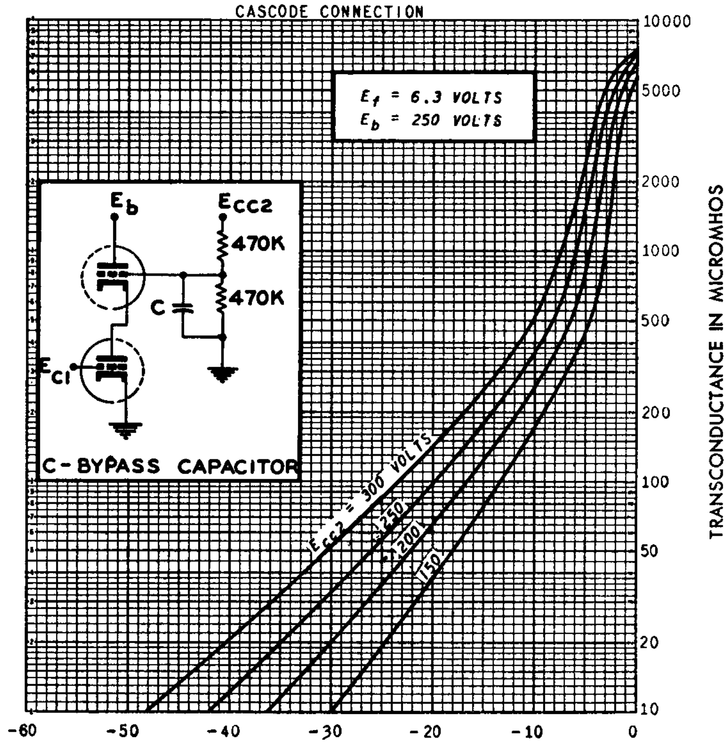
Plate-Supply Voltage	300	200	Volts
Plate Load Resistor	10000	0	Ohms
Voltage-Divider Supply Voltage	250	200	Volts
Grid-Supply Voltage	−5	−2	Volts
Cascode Transconductance	...	4000	Micromhos
Cascode Plate Current	...	10.5	Milliamperes
Third Harmonic Distortion			
Esig = 1.0 Volts, Peak	0.5		Percent

SPECIAL TESTS AND RATINGS

Inoperatives Control		
Minimum continuous operating time under life-test conditions or equivalent for all tubes prior to characteristics testing	46	Hours
Heater-Cycling Rating		
Cycles of Intermittent Operation, minimum	2000	Cycles
Ef = 7.5 volts cycled for one minute on and one minute off. Eb = Ec = 0 volts. Ehk = 135 volts with heater positive with respect to cathode.		
Shock Rating		
Impact Acceleration in Any Direction	600	G
Forces as applied by the Navy-type, High Impact (flyweight) Shock Machine for Electronic Devices or its equivalent.		
Fatigue Rating		
Vibrational Acceleration in Any Direction	2.5	G
Vibrational forces for a period of at least 100 hours at a frequency of 25 cycles per second.		

AVERAGE TRANSFER CHARACTERISTICS

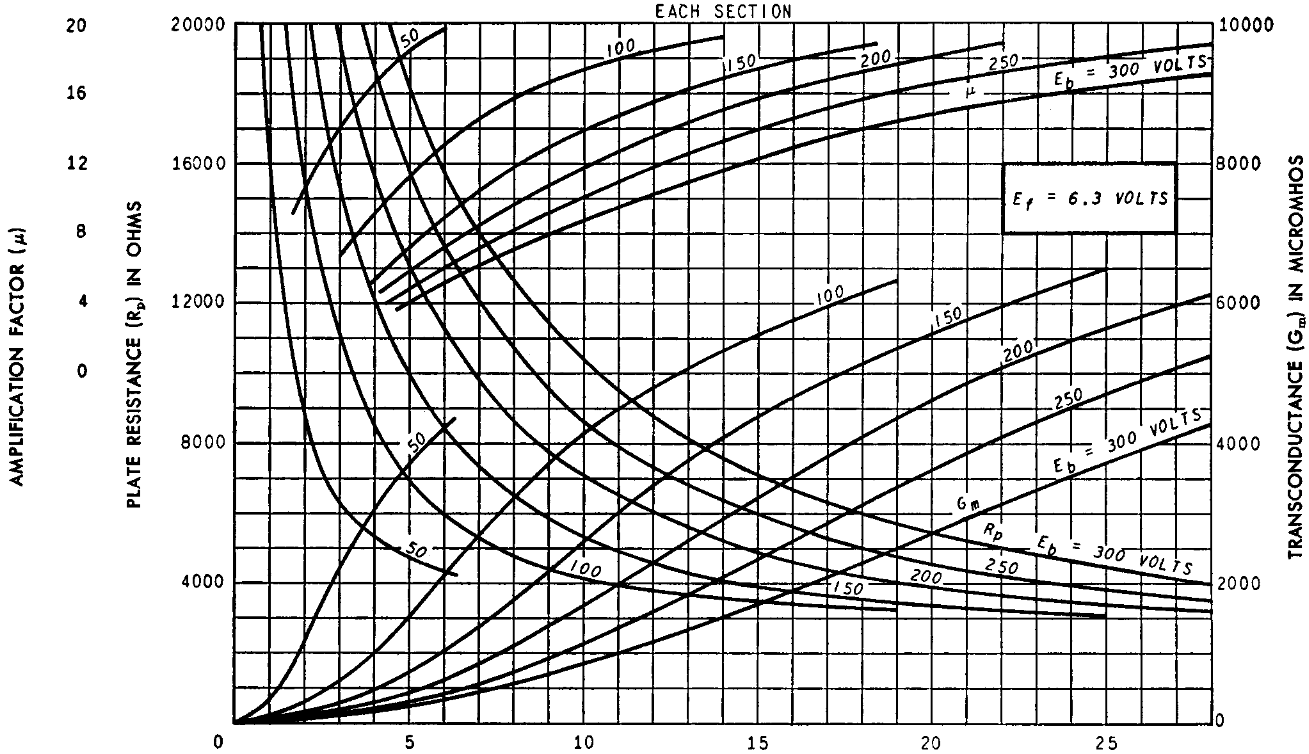
CASCODE CONNECTION



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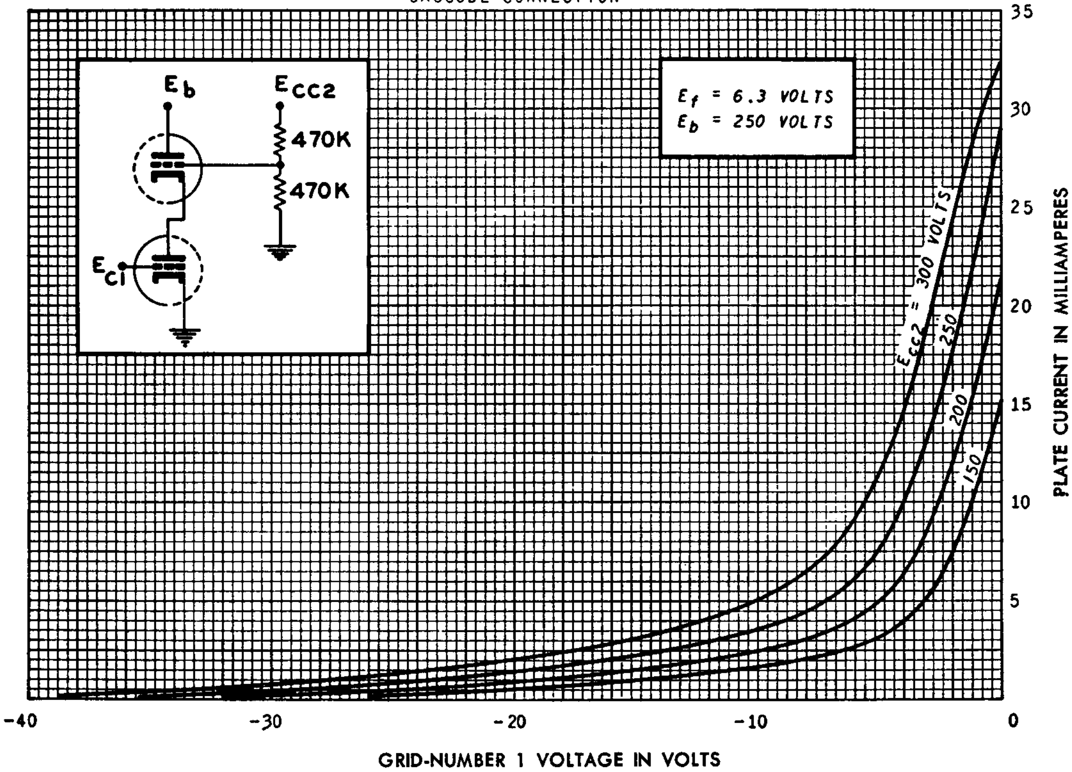
AVERAGE CHARACTERISTICS

EACH SECTION



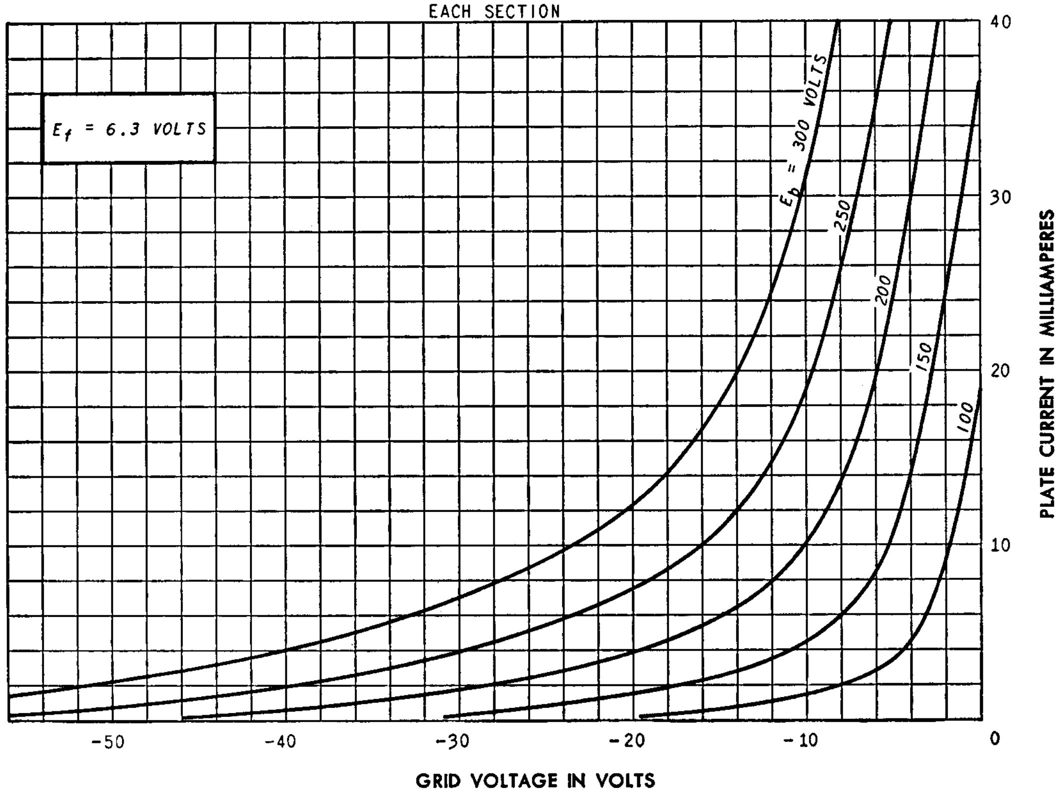
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AVERAGE TRANSFER CHARACTERISTICS
CASCODE CONNECTION



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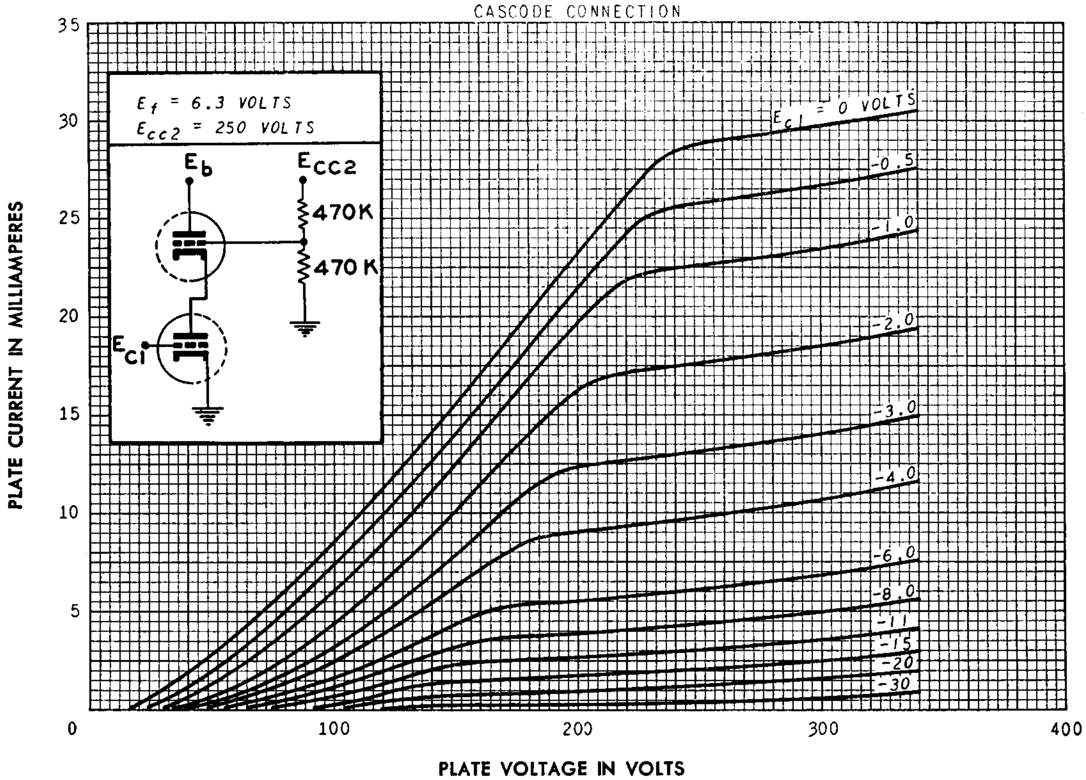
AVERAGE TRANSFER CHARACTERISTICS
EACH SECTION



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AVERAGE PLATE CHARACTERISTICS

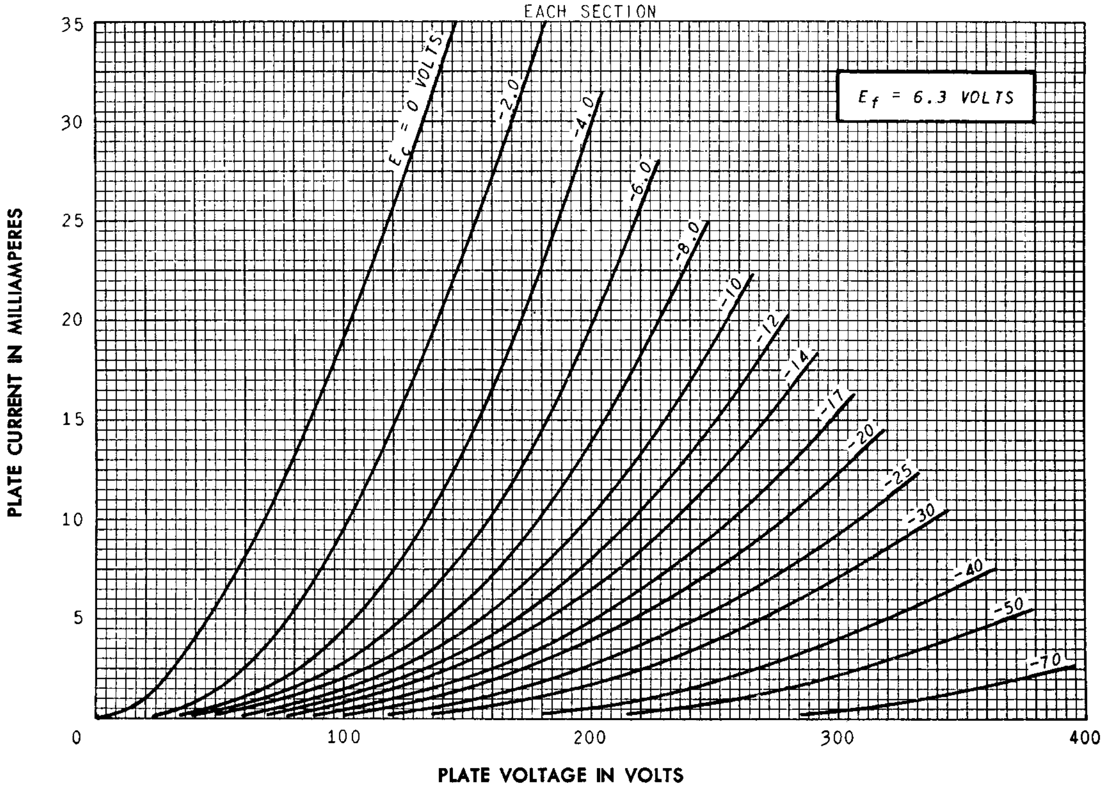
CASCODE CONNECTION



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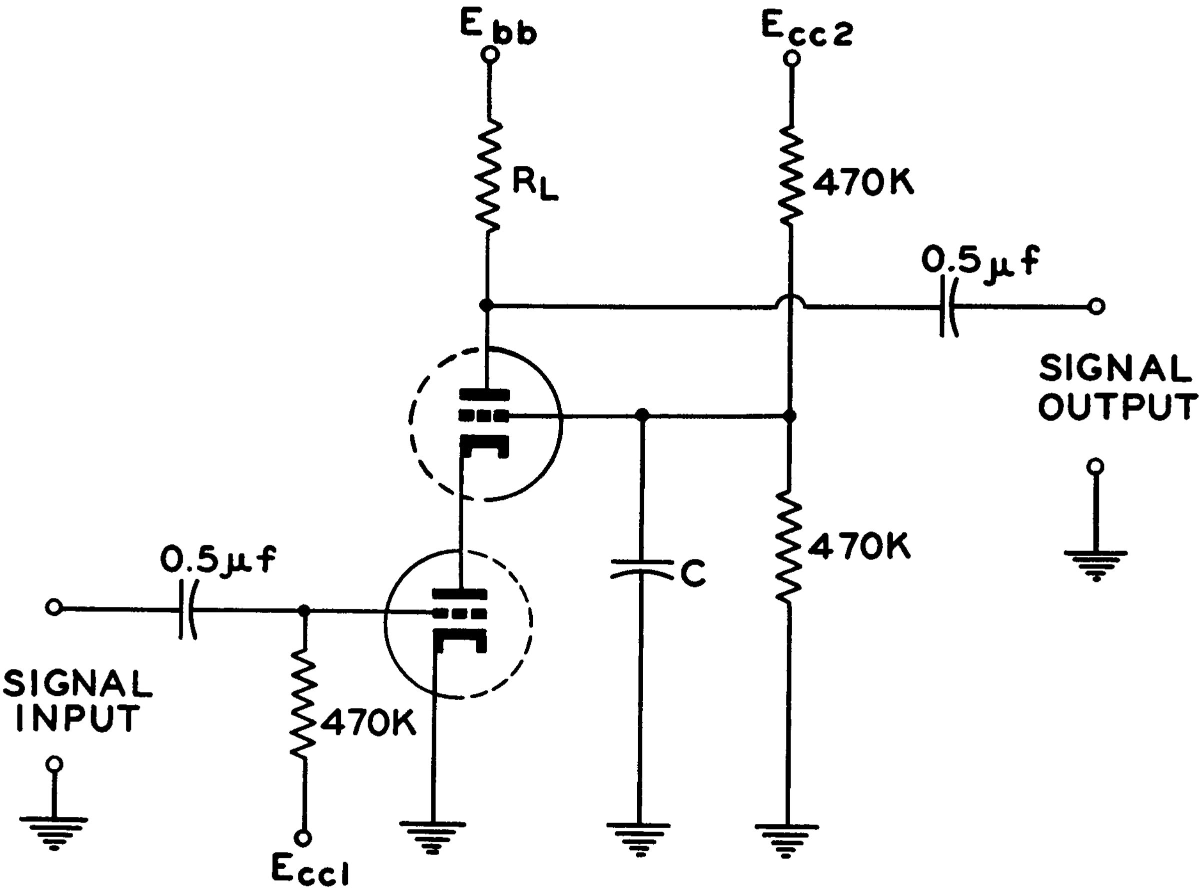
AVERAGE PLATE CHARACTERISTICS

EACH SECTION



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TYPICAL CIRCUIT FOR CASCODE OPERATION



C - BYPASS CAPACITOR

ELECTRONIC COMPONENTS DIVISION
GENERAL ELECTRIC
Schenectady 5, N. Y.